AMENDMENTS TO THE CLAIMS

1-3. (Canceled).

4. (Currently Amended) The phase locked loop of Claim 6 [[3]], wherein the output of the second means is coupled to the input of the integrator.

5. (Canceled).

6. (Currently Amended) ~~The phase locked loop of Claim 5, further comprising~~ A phase locked loop having a binary quantized phase detector, comprising:

a first means for storing a reference threshold value;

a comparator having a first input for receiving a first input signal and a second input for receiving the reference threshold value, the comparator comparing the first input signal with the reference threshold value to generate an output; and

a set threshold block, comprising:

a second means for generating a constant value for level shifting the output from the comparator to produce an output whose value is 0; and

an integrator, coupled to the second means, for locating a cross point in a data-eye diagram of a data sequence, having an input for receiving the output from the comparator and an output for generating a new threshold value;

a third means for filtering the output of the second means, having a first input for receiving the quantized output and an output coupled to the integrator; and

a fourth means for determining if two values are not equal, having a first input for receiving a first input signal, a second input for receiving a second input signal, and an output coupled to a second input of the third means.

7-13. (Canceled).

14. (Currently Amended) A method for eliminating dead zone in a binary quantized phase detector, comprising:

referencing a reference data sample to locate a center of a first eye in a data-eye diagram;

receiving a first signal for a first data sample in the first center of the first eye;

receiving a second signal for a second data sample in a ~~the~~ wandering interval caused by a dead zone;

using the reference data sample to locate a center of a second eye in the data-eye diagram;

receiving a third signal for a third data sample in the center of the second eye;

applying a first comparison to a ~~the~~ value of the second signal and a reference threshold value;

applying a second comparison to a ~~the~~ value of the first signal and a first reference constant;

applying a third comparison to the value of the third signal and ~~to~~ a second reference constant; and

applying a function to a result ~~the results~~ of the second comparison and the third comparison, determining if the two comparison results are equal.

15. (Original) The method of Claim 14, wherein the two comparison results differ.

16. (Original) The method of Claim 15, further comprising: after applying the function, integrating the output result of the first comparison.

17. (Original) The method of Claim 16, further comprising: after the integrating step, setting the second signal as the new reference data sample.

18. (Original) The method of Claim 16, further comprising: after the integrating step, setting the result of the integration as the new reference threshold value.

19. (Currently Amended) The method of Claim 18, ~~wherein the referencing step,~~ comprising: after the reference setting steps, restarting with the new reference data sample and reference threshold value.

20. (Original) The method of Claim 14, wherein the two comparison results are equal.

21. (Original) The method of Claim 20, further comprising: after applying the function, setting the second signal as the new reference data sample.

22. (Currently Amended) The method of Claim 21, ~~wherein the referencing step,~~ comprising: after the reference setting step, restarting with the new reference data sample.

23. (Original) The method of Claim 14, wherein the first comparison step produces an output whose average value is not 0.

24. (Original) The method of Claim 23, further comprising: after applying the first comparison, level shifting the output of the first comparison to produce an output whose average value is 0.